

Applicant: T. Yamamoto, et al.
U.S.S.N.: 09/832,232
RESPONSE TO OFFICE ACTION
Page 2

Please amend the subject application as follows:

IN THE CLAIMS

Cancel claim 35 without prejudice.

Amend claim(s) 1-6, 14, 16, 18, 21, 23, 26, 28, 36 and 37 to read as follows:

Subj

1. (AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

A1 Cmt

wherein, in the conduction period of the pixel switching elements, the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and the voltage applied to the signal lines is determined to be higher than a desired charging voltage required for the pixel electrodes so that the voltage applied to the pixel electrodes becomes a desired value.

2. (AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a

Applicant: T. Yamamoto, et al.
U.S.S.N.: 09/832,232
RESPONSE TO OFFICE ACTION

Page 3

conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

wherein a proportion of a maximum value of the voltage applied to the pixel electrodes with respect to the voltage supplied to the signal lines becomes different depending on a polarity of the voltage applied to the pixel electrodes.

AI Cmt

3. (AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

wherein the pulse width of a supplied voltage to the signal lines in the conduction period of the pixel switching elements becomes different depending on a polarity of the voltage applied to the pixel electrodes, even when displaying the same tone.

Applicant: T. Yamamoto, et al.
U.S.S.N.: 09/832,232
RESPONSE TO OFFICE ACTION
Page 4

4. (AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

wherein an allocated time for a single scanning line is different for each polarity of the voltage applied to the pixel electrodes.

5. (AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

Applicant: T. Yamamoto, et al.
U.S.S.N.: 09/832,232
RESPONSE TO OFFICE ACTION
Page 5

wherein, with respect to an image display device having the common electrode for applying a common potential to the pixels and having a plurality of scanning lines for driving the pixel switching elements, liquid crystal is displaced according to a potential difference between the common electrode and the pixel electrodes so as to carry out display, and an amplitude of a voltage supplied to the signal lines is equal to an amplitude of a voltage supplied to the common electrode.

6. (AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

*As
Concl'd*

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

wherein a maximum value of an amplitude of the voltage applied to the pixel electrodes is in a range of not less than 80 percent and not more than 98 percent of an amplitude of a voltage supplied to the signal lines.

Sub C1 14. (AMENDED) A method for driving an image display device, said method displaying tones by modulating a pulse width of a two-value voltage supplied to signal lines,

wherein a polarity of a voltage applied to pixels is changed for each scanning line, and in

A2 voltage application to pixel electrodes with a reference voltage 0V, an amplitude of scanning lines is varied between positive application for applying a voltage to a positive side and negative application for applying a voltage to a negative side.

Sub C1 16. (AMENDED) A method for driving an image display device, said method displaying tones by modulating a pulse width of a two-value voltage supplied to signal lines,

A3 wherein a resistance of a transistor which switches ON or OFF signal application from the signal lines to pixels is increased with time from a beginning to an end of an application time of a single pixel, where the application time of the single pixel is 1 horizontal period.

Sub C1 18. (AMENDED) A driving device of an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are

individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

A4 *cont* said driving device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said driving device includes a signal line driving section for supplying a voltage, not less than a voltage supplied to the pixel electrodes, to the signal lines so that the voltage applied to the pixel electrodes becomes a voltage taking into account change of an optimum counter voltage according to a display tone.

a full cm

Sub C

21. (AMENDED) A driving device of an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

a5

said driving device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said driving device includes a scanning line driving section for varying an amplitude of a voltage supplied to the scanning lines between positive application for applying a voltage to a positive side and negative application for applying a voltage to a negative side.

Sub C

23. (AMENDED) An image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

a6 cont

Applicant: T. Yamamoto, et al.
U.S.S.N.: 09/832,232
RESPONSE TO OFFICE ACTION
Page 8

said image display device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

*Ab
could*
wherein said image display device includes a signal line driving section for supplying a voltage, not less than a voltage applied to the pixel electrodes, to the signal lines so that the voltage applied to the pixel electrodes becomes a voltage taking into account change of an optimum counter voltage according to a display tone.

Sub C
26. (AMENDED) An image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

*A1
Cmt*
said image display device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said image display device includes a scanning line driving section for varying an amplitude of a voltage supplied to the scanning lines between positive application for applying a voltage to a positive side and negative application for applying a voltage to a negative side.

Sub C1

28. (AMENDED) An activematrix-driven image display device including an image display panel for displaying an image by switching by a plurality of active elements, comprising:

a voltage varying circuit for varying a voltage of a signal for driving the active elements according to temperature change of the image display panel, so as to carry out temperature compensation of the active elements, and

a step-up circuit for stepping up a signal voltage for driving the active elements, said signal voltage for driving the active elements being stepped up by the step-up circuit after being varied by the voltage varying circuit.

Sub C1

36. (AMENDED) A driving device of an activematrix-driven image display device having an image display panel for displaying an image by switching by a plurality of active elements, said driving device comprising:

a voltage varying circuit for varying a voltage of a signal for driving the active elements according to temperature change of the image display panel, so as to carry out temperature compensation of the active elements, and

a step-up circuit for stepping up a signal voltage for driving the active elements, said signal voltage for driving the active elements being stepped up by the step-up circuit after being varied by the voltage varying circuit.

*a9
cont*

37. (AMENDED) A driving method of an activematrix-driven image display device having an image display panel for displaying an image by switching by a plurality of active

Applicant: T. Yamamoto, et al.
U.S.S.N.: 09/832,232
RESPONSE TO OFFICE ACTION
Page 10

elements and carrying out step up voltage of a signal for driving the active elements so as to supply the signal to the image display panel,

*a9
Cmild*
wherein a voltage of a signal for driving the active elements is varied before the step up according to temperature change of the image display panel, so as to carry out temperature compensation of the active elements.

REMARKS

Applicants appreciate the Examiner's thorough examination of the subject application and request reconsideration of the subject application based on the foregoing amendments and the following remarks.

Claims 1-37 are pending in the subject application. Claims 7-13, 16-17, 19-20, 22, 24-25 and 27 are allowed. Claims 1, 14, 15, 18, 21, 23, 26, 28-34, 36 and 37 stand rejected under 35 U.S.C. §102, 35 U.S.C. §103, and/or 35 U.S.C. §112, second paragraph. Claims 2-6 and 35 were objected to as depending from a rejected base claim; however, the Examiner indicated that these claims would be allowable if appropriately re-written in independent form. The above-referenced Office Action also indicates that claims 21 and 26 would be allowable if the §112 rejections were overcome.

Claim 35 was canceled in the instant amendment without prejudice to prosecuting this claim and the related pending independent claim(s) in a continuing application. Claims 28 and 36 were amended so as to include the limitations of canceled claim 35. Claims 2-6 were re-written so as to be in independent form as suggested by the Examiner. Claims 1, 14, 18, 23 and 37 were